

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

James R. Geschwindt et al

Docket No.: C-2950

Serial No.: 10/736,945

Art Unit: 1795

Filed: December 15, 2003

Examiner: Laios, Maria J.

Title: Permeable Inlet Fuel Gas Distributor
for Fuel Cells

Declaration Under 37 CFR 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Gregory Reynolds, declare that:

1. I reside at 127 Skyline Drive, South Windsor, Connecticut 06074
2. I have a Bachelor of Science degree in Mechanical Engineering and have been working in the field of fuel cells and related arts for 40 years, and am currently engaged in that field on behalf UTC Power Corporation, South Windsor, CT.
3. I have familiarized myself with the subject matter claimed in the subject application and the relevant content of US patent 6,045,935, Ketcham et al (Ketcham) and US patent 6,569,549, Sawyer.
4. Merriam-Webster's 11th Collegiate Dictionary defines –
"downstream" as *"in the direction...of a stream"*; and
"manifold" as *"a pipe fitting with several lateral outlets for connecting one pipe with several others."*
5. McGraw-Hill Dictionary of Scientific and Technical Terms defines –
"downstream" as *"in the direction of a flow"*; and
"manifolding" as *"...the division of a single fluid supply into several outlet streams"*.
6. Fig. 5 of the subject application is a side view while Fig. 6 thereof is a top view, as stated on page 5, lines 7-11.

7. At application page 7, lines 15-17: *"Fuel recycle gas is introduced into the manifold 53....A fuel inlet tube 54 receives neat fuel...."*

8. At application page 9, lines 17 and 18 (as amended): *"...the tube 54 comprises a permeable baffle...."*

9. The fuel flow is into the tube 54, through the porous baffle (small orifices 55 – page 7, line 18), *"toward the inlets to the fuel flow fields 58."* (page 7, line 26)

10. The direction of the stream or flow of gas is radially, from inside the tube 54, to outside the tube 54, which is within the internal manifold 53. Inside the tube 54 is upstream of the permeable baffle (tube 54), and inside the internal manifold 53 is downstream of the permeable baffle 54. *"The fuel recycle gas is introduced into the manifold 53...."* (page 7, lines 15 and 16) Therefore, it is "downstream" of the porous baffle 54.

11. Ketcham discloses *"manifold tubes 35 and 36"* (5:58), *"manifolding tubes 35 and 36"* (6:4). Thus, tube 36 is referred to as a "manifold" and serves the function of a "manifold", which is "manifolding"; the tube 36 delivers fuel to each fuel cell.

12. At 6:7-14, Ketcham states, *"The oxidizer and fuel exit the delivery manifold tubes, pass through the ceramic tube perforations 55, through the separator felt, wool, or fibrous mats 32 and 34 and come into contact with the anode 62 or cathode 64. Fuel and oxidizer are prevented from mixing within the annulus (between manifolding tubes and ceramic tubes) by metal or ceramic baffle disks 67 which are spaced at the same intervals as the electrolyte sub-assemblies and the metal interconnects 74."*

13. Thus, for each cell, there is an annulus, cordoned off by baffle disks 67. Once the fuel passes from the tube 36 through perforations 59, the gas is committed to a single fuel cell. It follows that the space outside of the tube 36 is not *"a fuel inlet manifold in fluid communication with all of said fuel flow field inlets"* (claim 2, lines 5, 6; emphasis added).

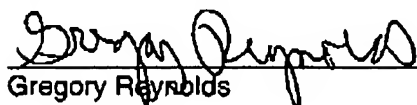
14. Instead, the tube 36 is the *"manifold in fluid communication with all of said fuel flow field inlets"* as in claims 2 and 14.

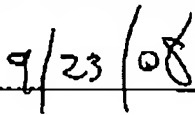
15. The tube 36 flows gas to individual fuel cells through perforations 59 and through the "annulus" which is separated from the other gas and therefore the other fuel cells by baffle disks 67. There is no "manifold" downstream of the tube 36; there is only one annulus for each fuel cell, each annulus communicating with a single fuel cell.

16. In Ketcham, there is no *"inlet chamber...including a permeable baffle through which fuel from said chamber is flowed into said inlet manifold."* (Claim 2, lines 7-10; emphasis added).

17. In Sawyer, the valve 30 is downstream of the fuel inlet manifold 26 as well as the fuel flow fields (adjacent anode electrodes 14) and the fuel exit manifold 28.

All statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.


Gregory Reynolds


Date